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EXAMINER	
VIANA DI PRISCO, GERMAN	
ART UNIT	**PAPER NUMBER**
2609	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/23/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/617,363	WU ET AL.	
	Examiner	Art Unit	
	German Viana Di Prisco	2609	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 July 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-42* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-42* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *11 July 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *03/03/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement submitted on March 3, /2004 has been considered by the Examiner and made of record in the application file.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 39 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. Claim 39, as applied to claim 34, recites the limitation "wherein the value of n is based on a status as a repeater or non-repeater", and in claim 34 "n" is not mentioned. There is insufficient antecedent basis for this limitation in the claim. For purposes of the examination the examiner will assume that claim 39 depends on claim 38.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 1, 3-5, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barlev et al. (United States Patent Application Publication No.: 2005/0220180 A1) in view of Sklower et al. (Network Working Group, Request for Comments: 1990, *The PPP Multilink Protocol*, August 1996).

Consider claim 1, Barlev et al. clearly show and disclose a system for transmitting high speed data over a plurality of relatively low bandwidth unshielded twisted copper pairs comprising: a high speed data interface 274 (figure 7 and paragraph [0143]) adapted to receive said high speed data stream 272 (figure 7 paragraph [0143]), and to inversely multiplex said high speed data stream into a plurality of parallel data streams (paragraph [0013], a framer adapted to receive one of said parallel data streams, and to generate a stream of packets(inherently taught in paragraph [0148]), and a plurality of modems 279 adapted to modulate each corresponding stream of packets onto a twisted pair conductor 280 (figure 7 paragraph [0143]).

However Barlev et al. do not explicitly disclose that in the generated stream of packets, each packet having a packet index number.

In the same field of endeavor, Sklower et al. disclose a method for splitting, recombining and sequencing data packets wherein data fragments are transmitted within a packet comprising a sequence number (packet index number) (pages 1,7-9, and figure 2)

Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to generate packets having a packet sequence number as disclosed by Sklower et al. in the system of Barlev et al. for the purpose of easy reassembling of the high-speed data stream.

Consider claim 3, and as applied to claim 1 above, Barlev et al. as modified by Sklower et al. disclose a system for transmitting high speed data over a plurality of relatively low bandwidth unshielded twisted copper pairs wherein the number of parallel data streams for a bit rate of 45 Mbps and cable length of 8000 ft is 18 (Table 1, pages 17-18).

Consider claim 4, and as applied to claim 1 above, Barlev et al. as modified by Sklower et al. disclose a system for transmitting high speed data over a plurality of relatively low bandwidth unshielded twisted copper pairs wherein a plurality of high speed data stream rates are supported including DS3 (T3 and E3)(paragraph [0111]).

Consider claim 5, and as applied to claim 1 above, Barlev et al. as modified by Sklower et al. disclose a system for transmitting high-speed data over a plurality of relatively low bandwidth unshielded twisted copper pairs wherein the number of said pairs depends on the length of the cable (distance). For a given bit rate, the longer the cable the more pairs are required as shown in Table 1 (pages17-18). Even though Table 1 does not explicitly show an instance using four pairs, it is obvious that four pairs can be used with a corresponding reduction in distance for a given bit rate.

Consider claim 11, and as applied to claim1 above Barlev et al. as modified by Sklower et al. clearly show and disclose a system for transmitting high speed data over a plurality of relatively low bandwidth unshielded twisted copper pairs comprising a plurality of DSL modems that conform to the T1E1.4 HDSL2 standard which implies the

use of a low frequency band in the upstream direction and a high frequency band for the downstream direction (paragraph [0116]).

9. Claims 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Barlev et al. (United States Patent Application Publication No.: 2005/0220180 A1) in view of Sklower et al. (Network Working Group, Request for Comments: 1990, *The PPP Multilink Protocol*, August 1996), as applied to claim 1 above, and further in view of Vallee et al. (Unites States Patent No.: 5,608,733).

Consider claim 2, and as applied to claim 1 above, Barlev et al. as modified by Sklower et al. inherently teaches the use of a framer in order to divide the high rate stream into a plurality of frames of a given length (Barlev et al., paragraph [0148]).

However Barlev et al. do not explicitly teach that the framer is adapted to generate a stream of packets with each packet having a stream number.

In the same field of endeavor, Vallee et al. disclose a method for ATM inverse multiplexing wherein ATM cells (packets) are send over a connection consisting of a plurality of transmission links in a specific round robin order using packets containing sequence numbers corresponding to each of the low data rate data streams (column 2, lines 58-67 and column 3, lines 31-34).

Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to generate packets having a stream number as disclosed by Vallee et al. in the system of Barlev et al. as modified by Sklower et al. for the purpose of easy reassembling of the high-speed data stream.

10. Claims 25-27, 33-36, and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barlev et al. (United States Patent Application Publication No.: 2005/0220180 A1) in view of Vallee et al. (Unites States Patent No.: 5,608,733), and further in view of Sklower et al. (Network Working Group, Request for Comments: 1990, *The PPP Multilink Protocol*, August 1996).

Consider claim 25, Barlev et al. clearly show and disclose a system for receiving a high speed data stream over a plurality of twisted pair conductors comprising: a plurality of modems adapted to demodulate a plurality of parallel signals received over said plurality of twisted pair conductors into a plurality of data streams each comprising a stream of packets (figure 8 and paragraphs [0146] and [0168]), inherently teaches the use of a deframer adapted to receive said parallel streams of packets, and to synchronize packets from said parallel streams (paragraph [0156]) ; and a high speed data interface adapted to receive said plurality of synchronized parallel data streams and to multiplex said plurality of parallel data streams into said high speed data stream 298 (figure 8 and paragraphs [0146] and [0168]).

However Barlev et al. do not specifically disclose the use of a stream identifier and a packet number.

In the same field of endeavor, Vallee et al. disclose a method for ATM inverse multiplexing wherein ATM cells (packets) are send over a connection consisting of a plurality of transmission links in a specific round robin order using packets containing

sequence numbers corresponding to each of the low data rate data streams (column 2, lines 58-67 and column 3, lines 31-34).

Therefore it would have been obvious to a person of ordinary skill in the art, at the time the invention was made, to use packets containing sequence numbers corresponding to each of the low data rate data streams in the to use a packet sequence number as disclosed by Vallee et al. in the system of Barlev et al. for the purpose of easy reassembling of the high speed data stream.

The combination of Barlev et al. and Vallee et al. teach the use of a stream sequence number in order to reassemble the high rate data stream. However it fails to teach the use of a packet number.

In the same field of endeavor Sklower et al. disclose a method for splitting, recombining and sequencing data packets wherein data fragments are transmitted within a packet comprising a packet sequence number (packet number) (pages 1,7-9, and figure 2).

Therefore it would have been obvious to a person of ordinary skill in the art, at the time the invention was made, to use a packet sequence number as disclosed by Sklower et al. in the combination of Barlev et al. and Vallee et al. in order to reassemble the high speed data stream.

Consider claim 26, and as applied to claim 25 above, Barlev et al. as modified by Vallee et al. and further modified by Sklower et al. disclose a system for receiving a high speed data stream over a plurality of twisted pair conductors wherein a plurality of high speed data stream rates are supported including DS3 (T3 and E3) (paragraph [0111]).

Consider claim 27, and as applied to claim 25 above, Barlev et al. as modified by Vallee et al. and further modified by Sklower et al. disclose a system for transmitting high speed data over a plurality of relatively low bandwidth unshielded twisted copper pairs wherein the number of said pairs depends on the length of the cable (distance). For a given bit rate, the longer the cable the more pairs are required as shown in Table 1 (pages17-18). Even though Table 1 does not explicitly show an instance using four pairs, it is obvious that four pairs can be used with a corresponding reduction in distance for a given bit rate.

Consider claim 33, and as applied to claim 25 above Barlev et al. as modified by Vallee et al. and further modified by Sklower et al. clearly show and disclose a system for receiving a high speed data over a plurality of relatively low bandwidth unshielded twisted copper pairs comprising a plurality of DSL modems that conform to the T1E1.4 HDSL2 standard which implies the use of a low frequency band in the upstream direction and a high frequency band for the downstream direction (Barlev et al., paragraph [0116]).

Consider claim 34, Barlev et al. clearly show and disclose a method of transmitting high speed data over a plurality of relatively low bandwidth unshielded twisted copper pairs comprising: receiving a high speed data stream and to inversely multiplex said high speed data stream into a plurality of parallel data streams generating a stream of packets from each parallel data stream, and modulating each corresponding stream of packets onto a corresponding twisted pair conductor 280 (figure 7 and paragraphs [0013], and [0155]-[0156]).

However Barlev et al. do not specifically disclose the use of a stream identifier and a packet number.

In the same field of endeavor, Vallee et al. disclose a method for ATM inverse multiplexing wherein ATM cells (packets) are send over a connection consisting of a plurality of transmission links in a specific round robin order using packets containing sequence numbers corresponding to each of the low data rate data streams (column 2, lines 58-67 and column 3, lines 31-34).

Therefore it would have been obvious to a person of ordinary skill in the art, at the time the invention was made, to use packets containing sequence numbers corresponding to each of the low data rate data streams in the to use a packet sequence number as disclosed by Vallee et al. in the system of Barlev et al. for the purpose of easy reassembling of the high speed data stream.

The combination of Barlev et al. and Vallee et al. teach the use of a stream sequence number in order to reassemble the high rate data stream. However it fails to teach the use of a packet number.

In the same field of endeavor Sklower et al. disclose a method for splitting, recombining and sequencing data packets wherein data fragments are transmitted within a packet comprising a packet sequence number (packet number) (pages 1,7-9, and figure 2).

Therefore it would have been obvious to a person of ordinary skill in the art, at the time the invention was made, to use a packet sequence number as disclosed by

Sklower et al. in the combination of Barlev et al. and Vallee et al. in order to reassemble the high speed data stream.

Consider claim 35, and as applied to claim 34 above, Barlev et al. as modified by Vallee et al. and further modified by Sklower et al. disclose a system for receiving a high speed data stream over a plurality of twisted pair conductors wherein a plurality of high speed data stream rates are supported including DS3 (T3 and E3, paragraph [0111]).

Consider claim 36, and as applied to claim 34 above, Barlev et al. as modified by Vallee et al. and further modified by Sklower et al. disclose a system for transmitting high speed data over a plurality of relatively low bandwidth unshielded twisted copper pairs wherein the number of said pairs depends on the length of the cable (distance). For a given bit rate, the longer the cable the more pairs are required as shown in Table 1 (pages17-18). Even though Table 1 does not explicitly show an instance using four pairs, it is obvious that four pairs can be used with a corresponding reduction in distance for a given bit rate.

Consider claim 42, and as applied to claim 34 above Barlev et al. as modified by Vallee et al. and further modified by Sklower et al. clearly show and disclose a system for receiving a high speed data over a plurality of relatively low bandwidth unshielded twisted copper pairs comprising a plurality of DSL modems that conform to the T1E1.4 HDSL2 standard which implies the use of a low frequency band in the upstream direction and a high frequency band for the downstream direction (Barlev et al., paragraph [0116]).

11. Claims 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barlev et al. (United States Patent Application Publication No.: 2005/0220180 A1) in view of Sklower et al. (Network Working Group, Request for Comments: 1990, *The PPP Multilink Protocol*, August 1996), as applied to claim 1 above, and further in view of Hiramoto to et al. (United States Patent No.: 6,657,953 B1).

Consider claim 6 and as applied to claim 1 above, Barlev et al. as modified by Sklower et al. clearly show and disclose a system for transmitting high speed data over a plurality of relatively low bandwidth unshielded twisted copper pairs comprising a processor (figure 7).

However Barlev et al. as modified by Sklower et al. do not disclose said processor adapted to identify a loopback code in said high-speed data stream.

In the same field of endeavor Hiramoto et al. clearly show and disclose a signal loopback device comprising a loopback control unit 10 capable of identifying a loopback code in a DS3 signal (figure 1, column 13, line 29 – column 14, line 15).

Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to include a means for the identification of a loopback code as disclosed by Harimoto et al. in the system of Barlev et al. as modified by Sklower et al. in order to selectively test the performance of the communications equipment.

Consider claim 7, and as applied to claim 6 above, Barlev et al. as modified by Sklower et al and further modified Hiramoto et al. disclose a signal loopback device comprising a loopback control unit 10 capable of identifying a loopback code when said

code is continuously detected a predetermined number of times (Hiramoto et al., column 13, line 65 – column 14, line 3).

12. Claims 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barlev et al. (United States Patent Application Publication No.: 2005/0220180 A1) in view of Sklower et al. (Network Working Group, Request for Comments: 1990, *The PPP Multilink Protocol*, August 1996), as applied to claim 1 above, and further in view of Gewin et al. (United States Patent No.: 5,060,226).

Consider claim 8, and as applied to claim 1 above, Barlev et al. as modified by Sklower et al. clearly show and disclose a system for transmitting high speed data over a plurality of relatively low bandwidth unshielded twisted copper pairs comprising a processor (figure 7).

However Barlev et al. as modified by Sklower et al. do not disclose a switch adapted to configure said system as a repeater unit or a non-repeater unit.

In the same field of endeavor Gewin et al. disclose a telecommunications network test system wherein a plurality of devices located at selected points within the network can be remotely commanded to activate a loopback based on a unique address that is programmed on each device by setting a dip switch. Since the purpose of having a switch to configure a device as a repeater unit or a non-repeater unit is to control how the device responds to a loopback command, having devices configured with unique addresses by setting a dip switch accomplishes the same purpose (column 2 line 40-column 3 line 32).

Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use a dip switch as disclosed by Gewin et al. in the system of Barlev et al. as modified by Sklower et al. for the purpose of controlling the response to a loopback command.

Consider claims 9 and 10, and as applied to claim 8 above, Barlev et al. as modified by Sklower et al. and further modified by Gewin et al. disclose a telecommunications network test system wherein a plurality of devices located at selected points within the network can be remotely commanded to activate a loopback based on an unique address that is programmed on each device by setting a dip switch. Since the purpose of having a switch to configure a device as a west (LU) or east (RU) repeater unit or as a first repeater or a second repeater unit is to control how the device responds to a loopback command, having devices configured with unique addresses by setting a dip switch accomplishes the same purpose (Gewin et al, column 2 line 40-column 3 line 32).

13. Claims 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barlev et al. (United States Patent Application Publication No.: 2005/0220180 A1) in view of Sklower et al. (Network Working Group, Request for Comments: 1990, *The PPP Multilink Protocol*, August 1996), and ADC Telecommunications "A" (DS3/STS1 PBOR Installation Drawing) and further in view of ADC Telecommunications "C" (Installation Dwg 16 POS Chassis).

Consider claim 12, and as applied to claim 1 above, Barlev et al. as modified by Sklower et al. clearly show and disclose a system for transmitting high speed data over a plurality of relatively low bandwidth unshielded twisted copper pairs.

However Barlev et al. as modified by Sklower et al. do not disclose a front panel having a high speed data stream interface, and a rear interface, said system being adapted to switch between said front panel interface and said rear interface based on a user input.

In the same field of endeavor ADC Telecommunications "A" clearly shows a front panel having a high speed data stream interface, and a rear interface, said system being adapted to switch between said front panel interface and said rear interface when inserted in the chassis shown in ADC Telecommunications "C".

Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provision both front and real high speed interfaces that could be sleeted by the user as disclosed by ADC Telecommunications "A" and "C" in the system of Barlev et al. as modified by Sklower et al in order to accommodate for different installations.

Consider claim 13, and as applied to claim 12 above, Barlev et al. as modified by Sklower et al. and further modified by ADC Telecommunications "A" clearly show a repeater module comprising a front panel having a high speed data stream interface, and a rear interface. Said rear interface is designed to fit into a connector in the back

plane of a chassis thereby selecting said rear interface as shown in ADC Telecommunications "C".

14. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Barlev et al. (United States Patent Application Publication No.: 2005/0220180 A1) in view of Sklower et al. (Network Working Group, Request for Comments: 1990, *The PPP Multilink Protocol*, August 1996), Hiramoto et al. (United States Patent No.: 6,657,953 B1), and ADC Telecommunications "A" (DS3/STS1 PBOR Installation Drawing) and further in view of ADC Telecommunications "B" (DS3/STS-1 Repeater Products).

Consider claim 14, and as applied to claim 6 above Barlev et al. as modified by Sklower et al. and further modified by Hiramoto et al. disclose the claimed invention except that the processor is further adapted to switch between an active mode and a standby mode.

In the same field of endeavor ADC Telecommunications "A" and ADC Telecommunications "B" clearly show and disclose a DS3 repeater module (RP3-G10000) with a protected hot stand by configuration (ADC Telecommunications "B", page 5 and ADC Telecommunications "A").

Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to have the capability of switching between an active mode and a standby mode as disclosed by ADC Telecommunications"A" and "B" in the system of Barlev et al. as modified by Sklower et al. and further modified by Hiramoto et al. in order to provide redundancy.

15. Claims 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barlev et al. (United States Patent Application Publication No.: 2005/0220180 A1) in view of Sklower et al. (Network Working Group, Request for Comments: 1990, *The PPP Multilink Protocol*, August 1996), Hiramoto et al. (United States Patent No.: 6,657,953 B1), ADC Telecommunications "A" (DS3/STS1 PBOR Installation Drawing), and ADC Telecommunications "B" (DS3/STS-1 Repeater Products) and further in view of Stearns et al. (United States Patent No.: 7,058,011 B1).

Consider claim 15, as applied to claim 14 above, Barlev et al. as modified by Sklower et al., Hiramoto et al. and further modified by ADC Telecommunications "A" and "B" disclose the claimed invention except that the system is adapted to perform protection switching.

In the same field of endeavor Stearns et al. disclose a method and apparatus that provides protection switching wherein identical line units are configured so that for each line unit that carries protected traffic, another line unit is kept in a standby mode for use in case of failure (column 1, lines 50-63).

Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to perform protection switching as disclosed by Stearns et al. in the system of Barlev et al. as modified by Sklower et al., Hiramoto et al. and further modified by ADC Telecommunications"A" and "B" in order to provide redundancy.

Consider claim 16, as applied to claim 15 above, Barlev et al. as modified by Sklower et al., Hiramoto et al. and further modified by ADC Telecommunications "A" and "B" disclose the claimed invention except that the system is adapted to perform protection switching.

In the same field of endeavor Stearns et al. disclose a method and apparatus that provides 1:1 protection switching wherein identical line units are configured so that for each line unit that carries protected traffic, another line unit is kept in a standby mode for use in case of failure (column 1, lines 50-63).

Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to perform 1:1 protection switching as disclosed by Stearns et al. in the system of Barlev et al. as modified by Sklower et al., Hiramoto et al. and further modified by ADC Telecommunications "A" and "B" in order to provide redundancy.

16. Claims 17-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barlev et al. (United States Patent Application Publication No.: 2005/0220180 A1) in view of Sklower et al. (Network Working Group, Request for Comments: 1990, *The PPP Multilink Protocol*, August 1996), and further in view of Koenig et al. (United States Patent No.: 6,275,510 B1).

Consider claims 17-23, and as applied to claim 1 above, Barlev et al. as modified by Sklower et al. clearly show and disclose a system for transmitting high speed data over a plurality of relatively low bandwidth unshielded twisted copper pairs.

However Barlev et al. as modified by Sklower et al. do not disclose comprising LEDs adapted to display loss of signal status, or a loopback mode status, or a remote alarm status, or a normal operation status, or a standby mode status, or a system failure status, or a status of one of the plurality of parallel data streams.

In the same field of endeavor Koenig et al. clearly show a front panel of a DS3 multiplexer with LEDs adapted to display loss of signal status, or a loopback mode status, or a remote alarm status, or a normal operation status, or a standby mode status, or a system failure status, or a status of one of the plurality of parallel data streams (figure 24).

Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to have LEDs adapted to display loss of signal status, or a loopback mode status, or a remote alarm status, or a normal operation status, or a standby mode status, or a system failure status, or a status of one of the plurality of parallel data streams as disclosed by Koenig et al. in the system of Barlev et al. as modified by Sklower et al. for the purpose of showing the operating status of the system.

Consider claim 24, and as applied to claim 23 above, Barlev et al. as modified by Sklower et al. and further modified by Koenig et al. clearly show a front panel of a DS3 multiplexer with LED's adapted to display a loss of signal status corresponding to each of the parallel data streams (figure 24).

17. Claims 28-29 and 37-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barlev et al. (United States Patent Application Publication No.: 2005/0220180 A1) in view of Vallee et al. (Unites States Patent No.: 5,608,733), and Sklower et al. (Network Working Group, Request for Comments: 1990, *The PPP Multilink Protocol*, August 1996), and further in view of Hiramoto et al. (United States Patent No.: 6,657,953 B1).

Consider claim 28,and as applied to claim 25 above, Barlev et al. as modified by Vallee et al. and further modified by Sklower et al. clearly show and disclose a system for transmitting high speed data over a plurality of relatively low bandwidth unshielded twisted copper pairs comprising a processor (figure 7).

However Barlev et al. as modified by Vallee et al. and further modified by Slower et al. do not disclose said processor adapted to identify a loopback code in said high speed data stream.

In the same field of endeavor Hiramoto et al. clearly show and disclose a signal loopback device comprising a loopback control unit 10 capable of identifying a loopback code in a DS3 signal (figure 1, column 13, line 29 – column 14, line 15).

Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to include a means for the identification of a loopback code as disclosed by Hiramoto et al. in the system of Barlev et al. as modified by Vallee et al. and further modified by Sklower et al. in order to selectively test the performance of the communications equipment.

Consider claim 29, and as applied to claim 28 above, Barlev et al. as modified by Vallee et al., Sklower et al. and further modified Hiramoto et al. disclose a signal loopback device comprising a loopback control unit 10 capable of identifying a loopback code when said code is continuously detected a predetermined number of times (Hiramoto et al., column 13, line 65 – column 14, line 3).

Consider claim 37, and as applied to claim 34 above, Barlev et al. as modified by Vallee et al. and further modified by Sklower et al. clearly show and disclose a method of transmitting high speed data over a plurality of relatively low bandwidth unshielded twisted copper pairs comprising: receiving a high speed data stream and to inversely multiplex said high speed data stream into a plurality of parallel data streams generating a stream of packets from each parallel data stream, and modulating each corresponding stream of packets onto a corresponding twisted pair conductor 280 (figure 7 and paragraph [0013]).

However Barlev et al. as modified by Vallee et al. and further modified by Slower et al. do not disclose said processor adapted to identify a loopback code in said high speed data stream.

In the same field of endeavor, Hiramoto et al. show and disclose a signal loopback device comprising a loopback control unit that determines whether a loopback should be executed based on a predetermined number of times that the same code is repeated (figure 1, column13, line29-column 14, line 15).

Therefore it would have been obvious to a person of ordinary skill in the art, at the time the invention was made to use a signal loopback device comprising a loopback control unit that determines whether a loopback should be executed based on a predetermined number of times that the same code is repeated as disclosed by Hiramoto et al. in the method of Barlev et al. as modified by Vallee et al. and further modified by Sklower et al. in order to selectively test the performance of the communications equipment.

Consider claim 38, and as applied to claim 37 above, Barlev et al. as modified by Vallee et al. and further modified by Sklower et al. clearly show and disclose a method of transmitting high speed data over a plurality of relatively low bandwidth unshielded twisted copper pairs comprising: receiving a high speed data stream and to inversely multiplex said high speed data stream into a plurality of parallel data streams generating a stream of packets from each parallel data stream, and modulating each corresponding stream of packets onto a corresponding twisted pair conductor 280 (figure 7 and paragraph [0013]).

However Barlev et al. as modified by Vallee et al. and further modified by Slower et al. do not disclose said processor adapted to identify a loopback code in said high speed data stream.

In the same field of endeavor, Hiramoto et al. show and disclose a signal loopback device comprising a loopback control unit that determines whether a loopback

should be executed based on a predetermined number of times that the same code is repeated (figure 1, column13, line29-column 14, line 15).

Therefore it would have been obvious to a person of ordinary skill in the art, at the time the invention was made to use a signal loopback device comprising a loopback control unit that determines whether a loopback should be executed based on a predetermined number of times that the same code is repeated as disclosed by Hiramoto et al. in the method of Barlev et al. as modified by Vallee et al. and further modified by Sklower et al. in order to selectively test the performance the communications equipment.

18. Claims 30-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barlev et al. (United States Patent Application Publication No.: 2005/0220180 A1) in view of Vallee et al. (Unites States Patent No.: 5,608,733), and Sklower et al. (Network Working Group, Request for Comments: 1990, *The PPP Multilink Protocol*, August 1996), and further in view of Gewin et al. (United States Patent No.: 5,060,226).

Consider claim 30, and as applied to claim 25 above, Barlev et al. as modified by Vallee et al. and further modified by Sklower et al. clearly show and disclose a system for receiving high speed data over a plurality of relatively low bandwidth unshielded twisted copper pairs comprising a processor (Barlev et al., figure 8).

However Barlev et al. as modified by Vallee et al. and further modified by Sklower et al. do not disclose a switch adapted to configure said system as a repeater unit or a non-repeater unit.

In the same field of endeavor Gewin et al. disclose a telecommunications network test system wherein a plurality of devices located at selected points within the network can be remotely commanded to activate a loopback based on a unique address that is programmed on each device by setting a dip switch. Since the purpose of having a switch to configure a device as a repeater unit or a non-repeater unit is to control how the device responds to a loopback command, having devices configured with unique addresses by setting a dip switch accomplishes the same purpose (column 2 line 40-column 3 line 32).

Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use a dip switch as disclosed by Gewin et al. in the system of Barlev et al. as modified by Vallee et al. and further modified by Sklower et al. for the purpose of controlling the response to a loopback command.

Consider claims 31 and 32, and as applied to claim 30 above, Barlev et al. as modified by Vallee et al., Sklower et al. and further modified by Gewin et al. disclose a telecommunications network test system wherein a plurality of devices located at selected points within the network can be remotely commanded to activate a loopback based on an unique address that is programmed on each device by setting a dip switch. Since the purpose of having a switch to configure a device as a west (LU) or east (RU) repeater unit or as a first repeater or a second repeater unit is to control how the device responds to a loopback command, having devices configured with unique addresses by setting a dip switch accomplishes the same purpose (Gewin et al, column 2 line 40-column 3 line 32).

19. Claims 39-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barlev et al. (United States Patent Application Publication No.: 2005/0220180 A1) in view of Vallee et al. (Unites States Patent No.: 5,608,733), and Sklower et al. (Network Working Group, Request for Comments: 1990, *The PPP Multilink Protocol*, August 1996), and Harimoto et al. (Unites Sates Patent No.: 6,657,953 B1) and further in view of Gewin et al. (United States Patent No.: 5,060,226).

Consider claim 39, and as applied to claim 38 above, Barlev et al. as modified by Vallee et al., Sklower et al. and further modified by Hiramoto et al. clearly show and disclose a system for receiving high speed data over a plurality of relatively low bandwidth unshielded twisted copper pairs comprising a processor (Barlev et al., figure 8).

However Barlev et al. as modified by Vallee et al., Sklower et al. and further modified by Hiramoto et al. do not disclose a switch adapted to configure said system as a repeater unit or a non-repeater unit.

In the same field of endeavor Gewin et al. disclose a telecommunications network test system wherein a plurality of devices located at selected points within the network can be remotely commanded to activate a loopback based on a unique address that is programmed on each device by setting a dip switch. Since the purpose of having a switch to configure a device as a repeater unit or a non-repeater unit is to control how the device responds to a loopback command, having devices configured with unique

addresses by setting a dip switch accomplishes the same purpose (column 2 line 40-column 3 line 32).

Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use a dip switch as disclosed by Gewin et al. in the system of Barlev et al. as modified by Vallee et al., Sklower et al. and further modified by Hiramoto et al. for the purpose of controlling the response to a loopback command.

Consider claims 40 and 41, and as applied to claim 39 above, Barlev et al. as modified by Vallee et al., Sklower et al., Hiramoto et al., and further modified by Gewin et al. disclose a telecommunications network test system wherein a plurality of devices located at selected points within the network can be remotely commanded to activate a loopback based on an unique address that is programmed on each device by setting a dip switch. Since the purpose of having a switch to configure a device as a west (LU) or east (RU) repeater unit or as a first repeater or a second repeater unit is to control how the device responds to a loopback command, having devices configured with unique addresses by setting a dip switch accomplishes the same purpose (Gewin et al, column 2 line 40-column 3 line 32).

Conclusion

20. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure. Rubinstain et al. (United States Patent No.: 7,054,376 B1)

disclose a system for transmitting a 100 Mbps over four copper wire pairs. Barton et al. (United States Publication No.: 2003/0097624 A1) disclose a remote module for a communications network. Rahman et al. (United States Patent No.: 6,002,670) disclose optimization and recovery techniques in inverse multiplexing in ATM networks. Delvaux (United States Patent No.: 6,775,305 B1) discloses a system and method for combining multiple physical layer transport links. Agarwal et al. (United States Publication No.: 2004/0179486 A1) disclose a method and apparatus for segmentation, reassembly and inverse multiplexing of packets. Seren et al. (United States Patent No.: 7,065,104 B1) disclose a system for managing inverse multiplexing. Camiciottoli et al. (United States Patent No.: 3,692,964) disclose detecting a loopback code in a repeater.

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April 05, 2007

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4/13/07